

## BATON SCABBARD

### FIELD OF THE INVENTION

[0001] The present invention relates generally to baton carriers or scabbards for releasably supporting expandable batons, generally the waist level of a user. More particularly, the present invention relates to a scabbard for releasably supporting a fixed length or expandable baton, in either a retracted or extended position, at the waist level of a user such that the baton may be readily inserted into and released from the scabbard by lateral movement of the baton relative to the scabbard, and may be angularly oriented relative to the user's torso to enable selective positioning of the baton for access, and to enable the user to comfortably stand, squat, or sit without having to further manipulate the scabbard or baton.

### BACKGROUND OF THE INVENTION

[0002] Batons are well known as intermediate force weapons that provide a tactical, yet generally non-lethal means for use by law enforcement and security personnel to maintain order. When not in use, batons may be stowed in a variety of different types of carriers or holsters, typically termed scabbards, which are adapted for mounting on a belt or strap disposed about the waist of the user. Modern batons are typically lightweight and include expandable high strength telescoping tubular sections that when retracted into a handle can be conveniently carried in a belt supported scabbard for convenient access by the user. Known baton scabbards for supporting an expandable baton on the user's belt or on a separate strap disposed about the user's waist generally do not permit the baton to remain in a comfortable orientation on the waist when the officer is seated. Further, baton scabbards are known that enable a baton to be released from the scabbard by lateral movement of the baton relative to the scabbards, but generally do not permit a baton to be readily inserted into the scabbard through movement of the baton in a lateral direction relative to the scabbard.

[0003] Generally, security baton scabbards are designed so that a stowed baton cannot be inadvertently released from the scabbard or be readily seized from the scabbard by an adversary. Prior baton sheaths are operative to positively secure the baton within the scabbard, while at the same time providing for relatively quick release of the baton for authorized use. When an expandable baton is fully extended, it is usually releasably retained in the extended position and can be retracted by sharply striking the extended end of the baton with an axial blow. Batons come in various lengths, and a baton scabbard should preferably be capable of positively retaining or stowing batons of various lengths having a

fixed diameter.

[0004] Known baton carriers or scabbards are generally designed to stow an expandable type baton when fully retracted and inserted into the scabbard. When stowed in the scabbard, the longitudinal axis of the retracted baton is generally disposed in a vertical orientation substantially perpendicular to the waistline of the user and parallel to the user's leg when the user is standing. The baton axis is generally disposed at approximately a 90 degree angle to the user's leg when the user is seated. A stowed retracted baton generally permits unrestricted movement by the wearer. However, in certain applications, such as when a subject is not fully under control, and the like, it may be preferred or occasionally necessary to at least temporarily stow the baton in its expanded or extended position. Also, on occasion it may be impractical to collapse the baton, particularly where a hard surface is not available for striking the outermost end of the extended sections with an axial blow, such as when the user is on a soft grassy area. Under these circumstances, a scabbard that enables a baton to be readily inserted and withdrawn from the scabbard through lateral movement of the baton when in either an expanded or retracted condition would significantly enhance the utility of the scabbard.

[0005] While baton scabbards are generally used to stow a baton, occasions arise when it is convenient for a law enforcement or security office to use a scabbard to support other security devices useful in assisting the officer in fulfilling his or her duties. For example, it is sometimes necessary for law enforcement and security officers to use a baton-flashlight combination, such as the ASP TRIAD® flashlight manufactured by Armament Systems and Procedures, Inc., which generally have cylindrical handles or battery receiving barrels. Such combination baton-flashlights are generally held in one hand while an officer investigates a darkened area, and the barrel of the flashlight is generally disposed either parallel to the ground surface or at an angle no greater than approximately 45 degrees below or above horizontal. A scabbard capable of releasably supporting a combination baton-flashlight at various angles and that enables attachment to and release from the scabbard by lateral movement relative to the scabbard, would leave both hands of the user free for other tasks.

#### SUMMARY OF THE INVENTION

[0006] In accordance with the present invention, a baton scabbard and associated belt or strap attachment clip are provided that permit the scabbard to be worn on the user's waist and enable a baton to be readily inserted into and released from the scabbard through lateral movement of the baton relative to the scabbard. The baton can be stowed in either an

expanded (open) or closed configuration, and the belt clip permits the baton, in either its expanded or closed configuration, to be oriented for maximum comfort and accessibility while the wearer is standing, seated or disposed in any other position.

[0007] In a preferred embodiment, the scabbard includes a generally C-shaped housing that supports at least one snap-action latching mechanism, and preferably a pair of mutually cooperable latching mechanisms, such that a baton may be snapped into and released from the scabbard by lateral movement of the baton relative to the scabbard, and held in place by the latching mechanisms. The generally C-shaped housing is open at its top and bottom such that a baton of substantially any length can be readily stowed in the scabbard.

[0008] The scabbard preferably includes a pair of laterally opposed snap-action latching mechanisms, each of which includes parallel front and rear crowned rollers rotatably supported in a yoke assembly for snap-action pivotal movement. The yoke assemblies are supported within the C-shaped housing and are pivotal about parallel pivot axes such that the front and rear rollers are laterally spaced as pairs of parallel front and rear rollers, respectively. The corresponding pairs of front and rear rollers are positioned to enable a baton to be inserted laterally between the two front rollers and urged against the rear pair of laterally spaced rollers so that the rollers and yoke assemblies undergo a snap-action pivotal movement about their respective pivot axes as the baton progressively enters the scabbard. In this manner, the laterally opposed rollers undergo a snap-action engagement with the baton so that the baton is gripped between the laterally opposed front and rear pairs of rollers to thereby releasably retain the baton in place within the scabbard until withdrawn in a reverse direction.

[0009] The scabbard belt or strap attachment clip is pivotally connected to the scabbard C-shaped housing so as to enable the housing and a stowed baton to be attached to a belt or strap disposed about the user's waist and selectively angularly oriented relative to the belt or strap. A user can thus orient a baton or other elongated device stowed in the scabbard to better facilitate comfortable sitting, stooping or standing by the user. This leaves the user's hands free for other tasks.

[00010] Further objects, features and advantages of the present invention will become apparent from the following detailed description of a preferred embodiment when taken in conjunction with the accompanying drawings wherein like reference numerals designate like elements throughout the several views.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[00011] Fig. 1 is a perspective view of a baton scabbard constructed in accordance with a preferred embodiment of the present invention;

[00012] Fig. 2 is an exploded perspective view of the baton scabbard of Fig. 1;

[00013] Fig. 3 is a plan view of the baton scabbard of Fig. 1 with portions thereof showing a sectional view;

[00014] Fig. 4 is a perspective view of the baton scabbard of Fig. 1 having a fragmentary portion of a baton inserted therein;

[00015] Fig. 5 is a perspective view of the bottom case housing of the scabbard of Fig. 1 with the belt clip removed to illustrate a circular array of the detents formed on the bottom case housing;

[00016] Fig. 6 is a rear elevational view of the bottom case housing of Figs. 2 and 5;

[00017] Fig. 7 is a rear elevational side view of the bottom case housing of Fig. 5 taken along the line 7-7 of Fig. 6;

[00018] Fig. 8 is a rear elevational view of the top case housing of Fig. 2;

[00019] Fig. 9 is a rear elevational side view of the top case housing of Fig. 8 taken along the line 9-9 of Fig. 8;

[00020] Fig. 10 is a fragmentary cross-sectional view of the wheel shaped molding of the lower case housing showing raised radii taken along the line 10-10 of Fig. 6, which radii cooperate with the detents of the belt clip shown in Fig. 13 to enable selective pivotal adjustment of the scabbard housing relative to the belt clip;

[00021] Fig. 11 is a perspective view of a belt clip assembly;

[00022] Fig. 12 is a side view of the belt clip assembly of Fig. 11;

[00023] Fig. 13 is a rear elevational view of the belt clip assembly of Fig. 11 particularly illustrating the detents that cooperate with the raised radii of Fig. 10;

[00024] Fig. 14 is a fragmentary cross-sectional view showing raised radii taken along the line 14-14 of Fig. 13, which radii cooperate with the detents of the wheel shaped housing of Fig. 6 to enable selective pivotal adjustment of the scabbard housing relative to the belt clip;

[00025] Fig. 15 is a top sectional pictorial view particularly showing the angular position of the rollers when a baton is initially inserted into the baton holder;

[00026] Fig. 16 is a top sectional pictorial view particularly showing the angular position of the rollers when a baton is partially inserted into the baton holder; and

~~[00027]~~ Fig. 17 is a top sectional pictorial view particularly showing the angular position of the rollers when a baton is fully inserted into the baton holder.

## DETAILED DESCRIPTION

**[00028]** While the present invention is susceptible of embodiments in various forms, there is shown in the drawings a presently preferred embodiment that is described in greater detail hereafter. It should be understood that the present disclosure is to be considered as an exemplification of the present invention, and is not intended to limit the invention to the specific embodiment illustrated and described. It should be further understood that the title of this section of this application ("Detailed Description") relates to a requirement of the United States Patent and Trademark Office, and should not be found to limit the subject matter disclosed herein.

**[00029]** Referring now to the drawings, and in particular to Figs. 1-3, a baton scabbard constructed in accordance with a preferred embodiment of the present invention is indicated generally at 10. The scabbard 10 includes a baton holder 12 and a belt or strap attachment clip assembly 14 that enables the scabbard to be supported on a user's belt or a strap disposed about the user's waist. The baton holder 12 includes a generally C-shaped housing 16 having curved "arms" 16a, that are substantially mirror images of each other. The arms 16a are preferably integrally formed with or otherwise suitably secured to an interior connecting wall 16b and define a baton receiving entry opening 17. The C-shaped housing 16 pivotally supports snap-action means in the form of at least one, and preferably two roller assemblies 18 and 20. Each roller assembly 18 and 20 includes a pair of forward rollers 18a, 20a and rear rollers 18b, 20b, respectively, that are each rotatably supported in predetermined parallel relation to each other by pins 21, the opposite ends are which secured to and between corresponding upper and lower pairs of parallel roller assembly caps 22a and 22b, as best illustrated in Fig. 2.

**[00030]** The housing 16 is shown having a friction pad 23 in its interior wall 16b. Friction pad 23 may be, for example, a flexible sheet or insert providing a contact surface that a baton 24 (Fig. 4) contacts upon placement in the scabbard 10. Note that such batons and others, for example, are disclosed in U.S. Patent Nos. 5,348,297, 5,356,139, 5,407,197, 5,509,653, 5,657,986, 5,667,441 and 5,868,621, which are all assigned to the assignee of the present application. The friction pad 23 permits the placement of the baton 24 in the scabbard 10 in such a manner as to keep the baton 24 from slipping while placed in the scabbard 10. In a preferred embodiment of the present invention, a baton having a rubberized, or otherwise cushioned grip is used, and the friction pad 23 is made of a rubber material having a smooth surface. It has been found that a smooth surface rubber material will provide a superior means of holding the baton 24 with a cushioned grip, within the

scabbard 10. The smooth material of friction pad 23 and cushioned grip of the baton 24 provide a desirable degree of frictional contact with each other. It will be understood by persons having skill in the art that the scabbard 10 can be constructed without the friction pad 23 or with a friction pad using a different type of material (having either a greater or lower coefficient of friction) than in the described embodiments, without departing from the novel scope of the present invention. Further, in a preferred embodiment of the present invention, the friction pad 23 can be removeably placed within the scabbard 10 such that it can be easily removed and replaced by another type of friction pad that may be more suitable to a different type of baton. Alternatively, the friction pad 23 may be fully removed.

[00031] Referring now to Fig. 2, the elements of the baton holder 12 and belt attachment 14 can be seen in greater detail. It can be seen that roller assemblies 18 and 20 are similar in construction, and each comprises the front rollers 18a, 20a and the rear rollers 18b, 20b, held in fixed relation by a yoke body 34 in cooperation with the top and bottom roller assembly caps 22a and 22b. In the construction of a preferred embodiment of the roller assembly 18 (and similarly for roller assembly 20), the spring pin 21 is inserted into each roller 18a, 18b (20a and 20b). The yoke body 34 is placed adjacent the rollers 18a, 18b (20a, 20b) and roller assembly caps 22a, 22b are placed in axial alignment with the rollers. Fastener means, such as a screw or small bolt 38, is fastened at the outer surface of roller assembly caps 22a, 22b, preferably at the center of the assembly caps to fasten the roller assemblies 18, 20 together.

[00032] As shown in Fig. 2, the C-shaped housing 16 includes two main parts, namely, a top case housing 39a and bottom case housing 39b. It will be understood that in the assembly of baton holder 12, the roller assemblies 18, 20 can be inserted into top case housing 39a and bottom case housing 39b then secured thereto to lock roller assemblies within the C-shaped housing 16. A boss 90 located in each roller assembly cap 22a and 22b, and dimensioned to receive the fastening screw 38, is received between corresponding recesses 92 in the top case housing 39a and bottom case housing 39b. Thus, when the top case housing 39a and bottom case housing 39b are mated together, the roller assemblies 18, 20 are retained therebetween and are able to pivot about the axis of the bosses 90. More specifically, each roller assembly 18 and 20 pivots about the bosses 90 as a fixed unit, meaning that the forward and rear rollers 18a, 18b (20a, 20b) pivot as a unit, as the entire roller assembly 18 (20) pivots. This facilitates the snap-action insertion and release of the baton 24, as will be described hereinafter. It will be understood that other types of roller units, acting in a similar fashion to those shown, may be used without departing from the

novel scope of the present invention.

[00033] In the assembly of housing 16, however, it will be noted that a spring insert 40 and the friction pad 23 are first inserted into their respective location in housing 16. As noted above, friction pad 23 can be inserted against interior connecting wall 16c and held in a desirable location for contact with baton 24. The spring insert 40 can be inserted into a recess 40a of the bottom case housing 39b, as well as into a cooperating recess in the top case housing 39a. Because the spring insert is received within corresponding recesses 40a in both the top and bottom case housings 39a, 39b, the case housings are brought into alignment with each other. The top case housing 39a and bottom case housing 39b can then be held together with one or more fasteners 41, such as the cooperating male and/or female elongated screws or bolts, as shown.

[00034] The spring insert 40 in the present embodiment may provide the bias that allows roller assemblies 18, 20 to act as snap-action retaining members. Also, because the scabbard 10 is made of material that has some degree of flexibility (e.g., a plastic material, as opposed to rigid solid metal), such material in conjunction with the spring insert 40 permits the “arms” 16a of the C-shaped housing 16 to reciprocally flex in the direction shown by reference arrow 94 (Fig. 3).

[00035] Referring now to Fig. 2 and Figs. 5-9, the housing 16 includes the top case housing 39a and the bottom case housing 39b. Fig. 5 shows a rear perspective view of the bottom case housing 39b, Fig. 6 shows a rear view of the bottom case housing 39b, Fig. 7 shows a side view of Fig. 6, Fig. 8 shows a rear view of the top case housing 39a, and Fig. 9 shows a side view of Fig. 8. These views are shown with the belt attachment clip assembly 14 (Fig. 2) removed to particularly illustrate a generally wheel shaped molding 42 located opposite the receiving entry opening 17 of the housing 16. The wheel shaped molding 42 includes a circular member 44 having a generally smaller, but raised concentric cylindrical hub 46 within the circular member 44. Note that in Fig. 2, only an outer edge 43 of the wheel shaped molding 42 can be seen. The circular member 44 and hub 46 are not visible in that view.

[00036] Referring now to Figs. 8 and 9, the rear of the top case housing 39a is shown. A molded semicircular recess 47 cooperates with the circular member 44 of the bottom case housing 39b of Figs. 6 and 7 when the top case housing and bottom case housing are assembled. This provides a backing or support for the “top half” of the circular member 44. As shown in Figs 6 and 7, the circular member 44 projects upward from a generally horizontal plane 47a (Figs. 6 and 7) of the bottom case housing 39b such that approximately

one-half of the circular member 44 is shown above the horizontal plane.

[00037] Referring now to Figs. 5, 6, 10 in the illustrative embodiment, the circular member 44 and the hub 46 may be integrally molded so as to include a plurality of raised radii 48, which are elevated relative to the plane of the wheel shaped molding 42. The raised radii 48 project outwardly from the perimeter of the hub 46 toward the outer perimeter of the circular member 44. As shown in cross-section in Fig. 10, the raised radii 48 have a trapezoidal cross-sectional shape. In a preferred embodiment, radii walls 48a form an angle,  $\alpha$ , with the plane of the circular member 44 in a range greater than 90 degrees and less than or equal to 135 degrees. It will be understood, by persons having skill in the art that the baton holder of the present invention can be manufactured without the wheel shaped molding and concomitant structures without departing from the novel aspects of the present invention. Further, it will be understood by persons having skill in the art that radii 48 can be formed in different cross-sectional shapes and/or having different angular configurations without departing from the novel scope of the present invention.

[00038] Referring now to Figs. 2, 5, 6, and 11-14, Figs. 11 and 12 illustrate the belt clip 14 having a hollow channel 49 through which a belt may pass so as to secure the belt clip, and hence the baton holder 12, to the user's belt. As shown in Fig. 13, the rear side of the belt clip 14 is shown to particularly point out a complimentary locking wheel 50. The locking wheel 50 includes a circular aperture 56. The aperture 56 is configured to cooperate with and accept the corresponding cylindrical hub 46 so as to form a locking engagement that permits the belt clip 14 to be secured to and rotate relative to the bottom case housing 39b. It will be understood by persons having skill in the art that any manner of locking ring, such as a "radially inwardly tabbed" locking ring may be placed or attached so as to lock the belt attachment 14 and bottom case housing 39b together after hub 46 is inserted into the aperture 56.

[00039] Similar to the raised radii 48 for the circular member 44 of Fig. 6, the locking wheel 50 and circular aperture of Fig. 13 are connected together by complementary recessed radii 58, shown in greater detail in Fig. 14. The recessed radii 58 are recessed into the plane of the surface of the locking wheel 52. As shown in Fig. 14, the recessed radii 58 have a trapezoidal cross-sectional shape, which is complimentary to the raised radii 48 of Fig. 10. In a preferred embodiment, recessed walls 58a form an angle,  $\theta$ , with the locking wheel walls in a range of between greater than 90 degrees and less than or equal to 135 degrees. It will be understood by persons having skill in the art that the belt attachment of the present invention can be manufactured without the wheel shaped molding and concomitant structures without



departing from the novel scope of the present invention. Further, it will be understood by persons having skill in the art that recessed radii 58 can be formed in different cross-sectional shapes and/or having different angular configurations without departing from the novel scope of the present invention.

[00040] The connection of baton holder 12 and belt attachment 14 together, in the manner described above, permits the inter-meshing of raised radii 48 and recessed radii 58 when the circular member 44 is assembled with the locking wheel 50. This permits the baton holder 12 can be rotated to a desirable integral angle relative to belt attachment 14. The number of integral angular “stops” is governed by the number of radii 48 and 58 distributed about the circular member 44 and locking wheel 50, respectively, and the angular spacing therebetween. The preferred shapes of raised radii 48 and the recessed radii 58 permit interlocking of circular member 44 and the locking wheel 50 such that a desired amount of rotational force or pressure causes the circular member 44 to rotate relative to the locking wheel 50 (which is preferably fixed in position via the user’s belt that extends through the belt clip 14). The force sufficient to cause rotation of the circular member 44 relative to the locking wheel 50, and hence rotation of the baton holder 12, necessarily forces the circular member slightly apart from the locking wheel 50 along an axial axis 59 (Fig. 5) to permit the raised radii 48 to pass over and across the recessed radii 58 in a “detent” or “click-stop” manner. As mentioned above, the circular member 44 is locked to the locking wheel 50 with a locking ring (not shown) that permits the circular member 44 to slightly separate relative to the locking wheel 50 when sufficient rotational force is applied. Greater detail regarding the detent mechanism described above can be found in Application Serial No. 10/010,543 filed October 8, 2001, and assigned to the assignee of the present invention, and which is incorporated by reference in its entirety herein.

[00041] Referring back to Fig. 2, various bars or inserts 60 are shown that can be inserted within the belt opening 49 of the belt attachment 14 to permit the use of a wide variety of belt sizes with the device of the present invention. It will be understood by persons having skill in the art that various means of permitting the use of different size and thickness belts can be employed without departing from the novel scope of the present invention.

[00042] Referring now to Figs. 15-17, Fig. 15 shows the “pivoting” position of the forward and rearward rollers 18a, 18b (20a, 20b) in the roller assembly 18 (20) as a baton 24 is initially inserted. Fig. 16 shows the “pivoting” position of the forward and rearward rollers 18a, 18b (20a, 20b) in the roller assembly 18 (20) as the baton 24 is partially inserted. Fig. 17 shows the “pivoting” position of the forward and rearward rollers 18a, 18b (20a, 20b) in

the roller assembly 18 (20) when the baton 24 is fully inserted into the scabbard 10. Note that the angles and distances with respect to the rollers are not necessarily drawn to scale, and are for purposes of illustration only.

**[00043]** In the operation of the scabbard 10, an officer brings his or her baton 24 to the generally C-shaped opening 17 of the scabbard 10 and pushes it into the opening. Initially, the leading edge of the forward rollers 18a, 20a of each roller assembly 18, 20 contacts the circumference of the baton, as shown in Fig. 15. This tends to cause each roller assembly 18, 20 to pivot outwardly about an axis 66 (Fig. 2) of the roller assembly, which is coaxial with the fastener 38. This angle is shown by reference numeral 70 (Fig. 15). As illustrated, the angle 70 formed by the roller assemblies 18, 20 appears to “diverge” outwardly from the opening. In this position, the rear rollers 18b, 20b are “behind” a centerline diameter 96 of the baton 24 while the forward rollers 18a, 20a are slightly in front of the centerline diameter of the baton.

**[00044]** Next, as the baton is further inserted into the opening 17, the roller assemblies 18, 20 further pivot until both the forward rollers 18a, 20a and rear rollers 18b, 20b contact the baton 24 and are approximately equidistant from the centerline diameter 96 of the baton 24, as shown in Fig. 16. Accordingly, the angle 70a formed by the axis lines of each roller assembly is essentially parallel, as seen in Fig. 16. This causes the arms of the C-shaped housing 16 to flex outwardly in order to accommodate the baton, causing tension tending to “compress” the baton covering. Such outward flexing of the C-shaped housing is counter-biased by the spring tension provided by the spring insert (Fig. 2).

**[00045]** As the baton 24 is urged further back, the baton 24 eventually engages friction pad 24, or if not installed, the interior wall 16b of the housing. Note that the friction pad 23 may assist in holding the baton 24 in a vertical position relative to the baton holder 12 without slipping downward. Further, the material from which the rollers are formed may also assist in gripping the baton.

**[00046]** In this fully engaged position, the roller assemblies 18, 20 pivot the opposite way about their pivotal axes 66 (Fig. 2) to “snap” back into position under the tension caused by the spring insert 40 (Fig. 2) and the flexing of the housing, so that the forward rollers 18a, 20a and the rear rollers 18b, 20b of both roller assemblies tangentially contact the baton 24. The forward rollers essentially “snap” back into position and urge the baton 24 against the friction pad 23 or back wall 16b of the housing 16. In this position, as illustrated in Fig. 17, an angle 72 formed by the roller assemblies 18, 20 appears to “converge” outwardly from the opening. Moreover, in this position, the forward rollers 18a, 20a are “in front of” the

centerline diameter 96 of the baton 24 and tend to urge the baton 24 against the friction pad.

**[00047]** Although an illustrative embodiment of the invention has been shown and described, it is to be understood that various modifications and substitutions may be made by those skilled in the art without departing from the novel spirit and scope of the invention.